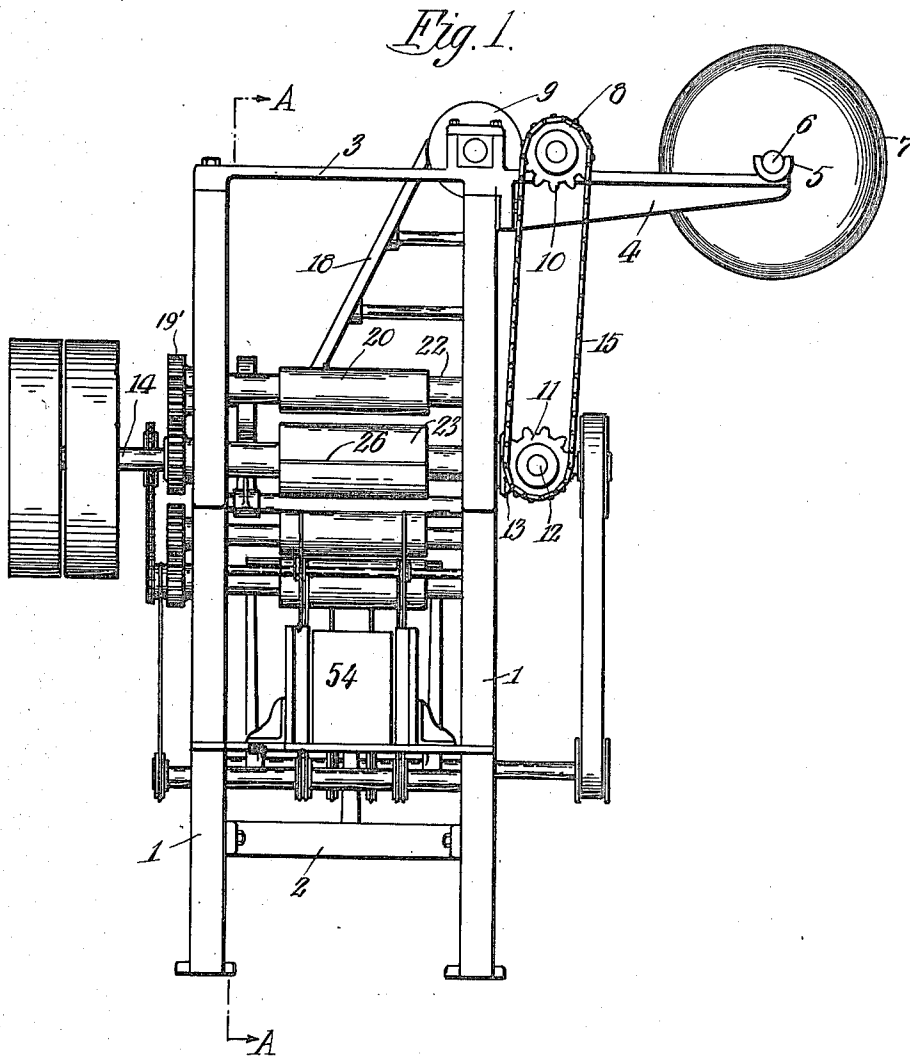


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PAPER CUTTING AND FOLDING MACHINE.
APPLICATION FILED APR. 4, 1916.

1,282,838.

Patented Oct. 29, 1918.
4 SHEETS—SHEET 1.



D. W. HUDSON INVENTOR.

BY *C. F. Wood*

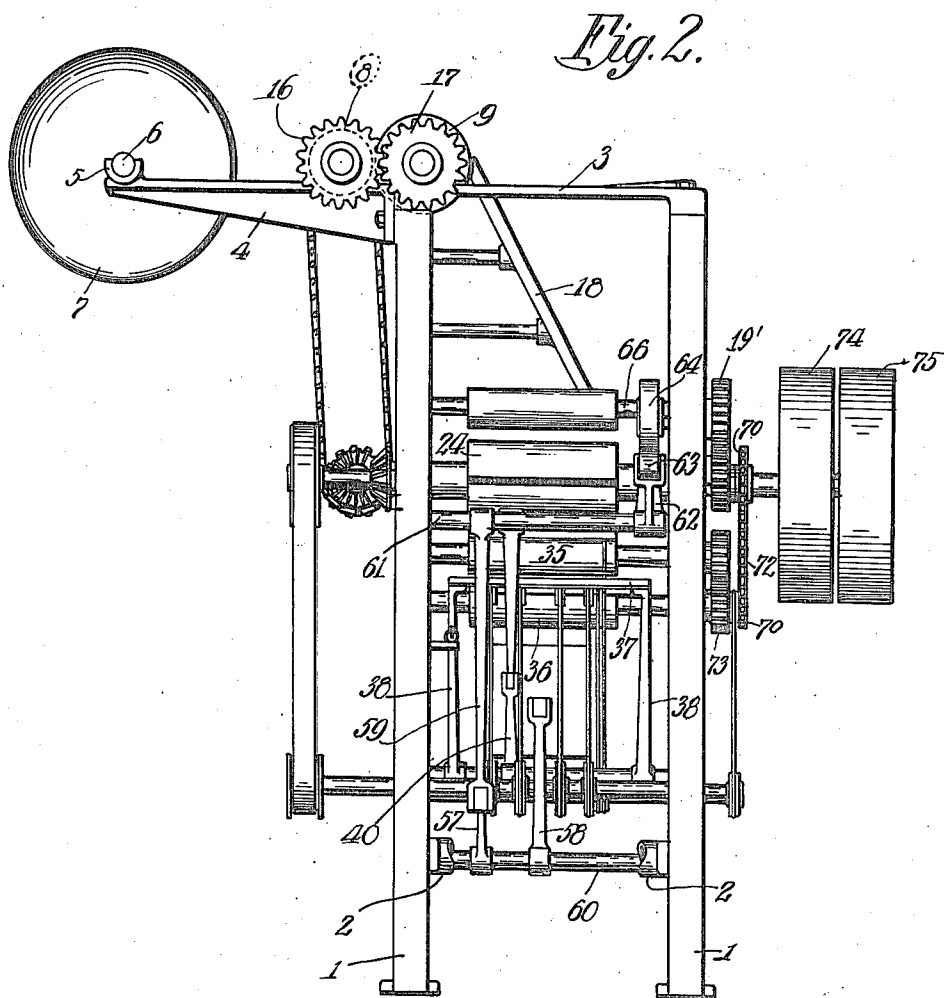
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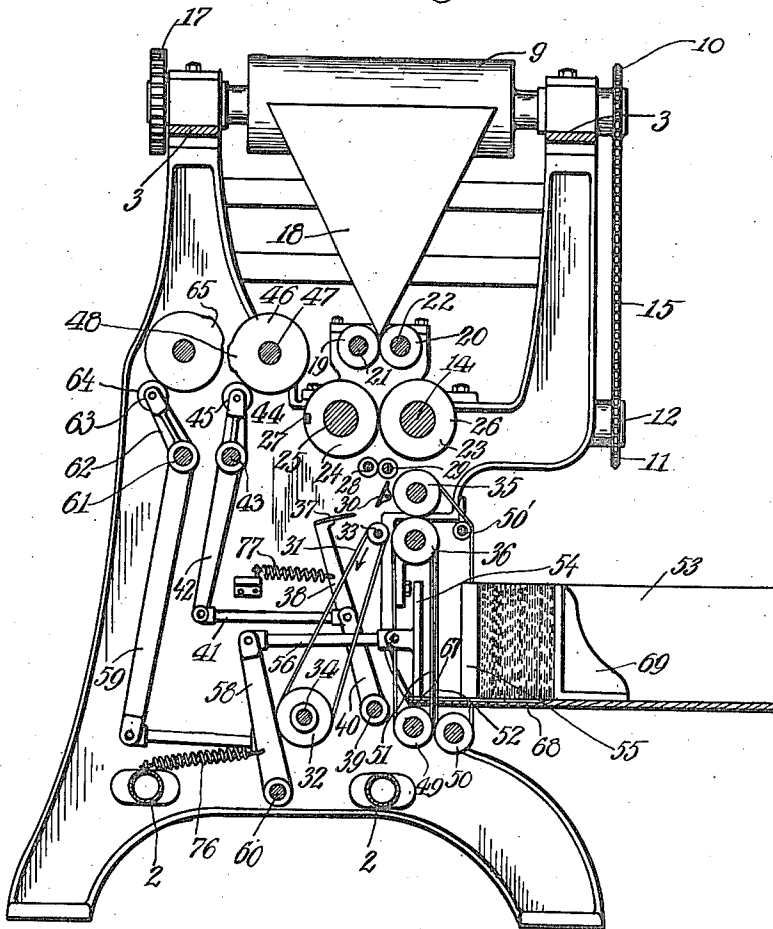
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Fig. 3.



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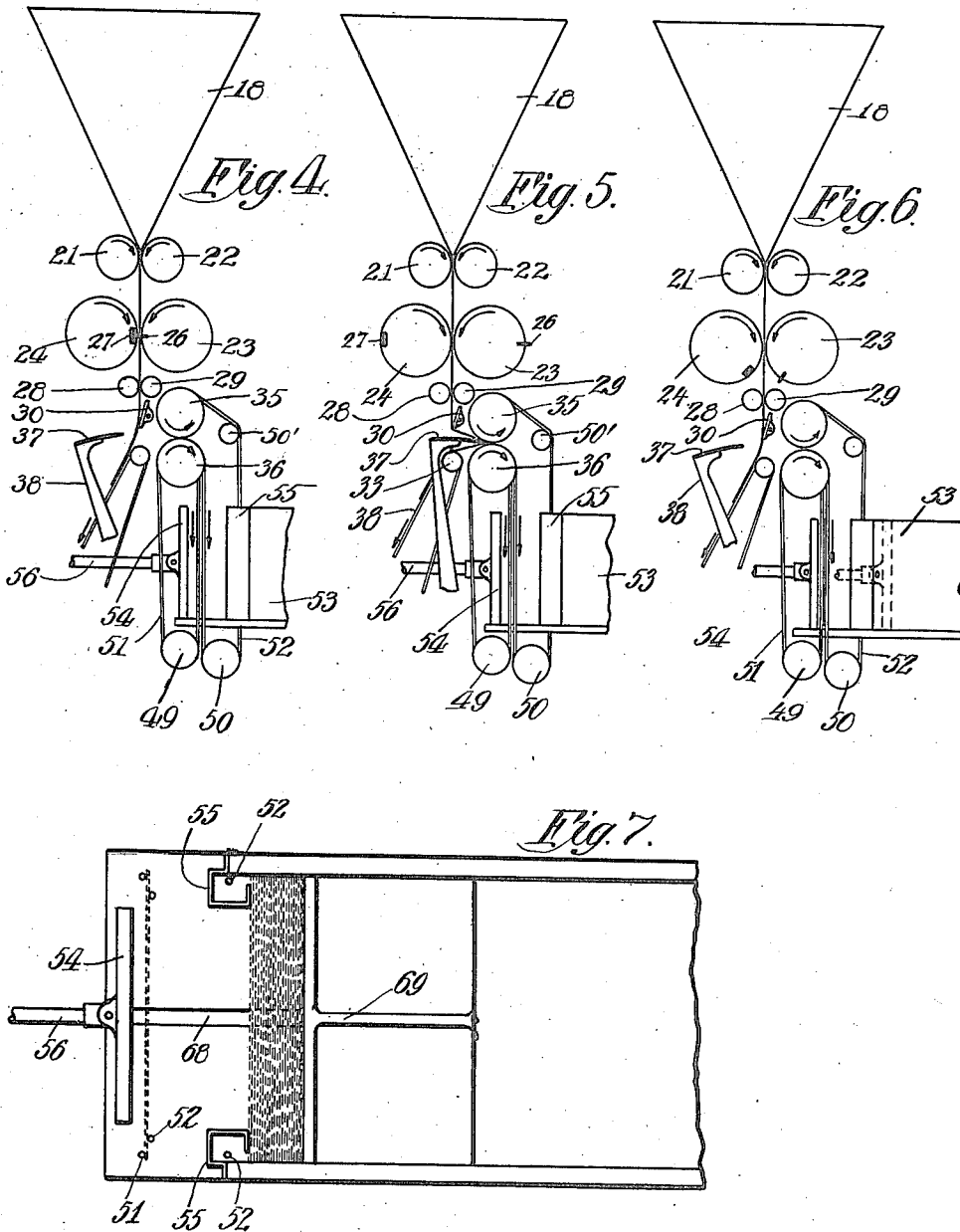
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UNITED STATES PATENT OFFICE.

DAVID WILLIAM HUDSON, OF GREEN BAY, WISCONSIN, ASSIGNOR TO HUDSON-SHARP MACHINE COMPANY, OF GREEN BAY, WISCONSIN, A CORPORATION OF WISCONSIN.

PAPER CUTTING AND FOLDING MACHINE.

1,282,838.

Specification of Letters Patent.

Patented Oct. 29, 1918.

Application filed April 4, 1916. Serial No. 88,797.

To all whom it may concern:

Be it known that I, DAVID W. HUDSON, a citizen of the United States of America, residing at Green Bay, in the county of Brown and State of Wisconsin, have invented certain new and useful Improvements in Paper Cutting and Folding Machines, of which the following is a specification, reference being had therein to the accompanying drawing.

The invention relates to a paper cutting and folding machine where paper napkins are cut from a roll of paper in predetermined length, folded twice, and delivered to a container or the like for further purposes.

The principal object of the invention consists in the provision of a machine of the character described which cuts and folds the paper napkins and delivers the same to a container in a novel and efficient manner.

A further object of the invention consists in the provision of improved feeding means, whereby the napkins are conveyed to a container.

A further object of the invention resides in the provision of a plunger which at a given moment removes the napkins from the feeding means and forces them into the container.

To the accomplishment of the general objects stated and others that will appear as the description proceeds the preferred embodiment of the invention consists in the novel arrangement and construction of parts illustrated in the drawings, described in the specification and defined in the appended claims. In the drawings—

Figure 1 is a front elevation of the machine made in accordance with the invention.

Fig. 2 is a rear view of the same.

Fig. 3 is a sectional view taken on line A—A of Fig. 1.

Figs. 4, 5 and 6 show the different positions of the mechanism and of the web of paper.

Fig. 7 is a plan view of the receiving container, plunger and staggered belts for conveying the paper web.

Referring to the drawings 1 designates suitable side frames placed apart and interconnected at their lower end by transverse rods 2 fastened to said frames in any appropriate or suitable manner. The upper ends

of the said frames are connected by the transverse beams 3 which at one side extend beyond the side frame 1 and form supporting arms 4. The arms 4 are formed integral at the outer end with open bearings 5 to receive a shaft 6 upon which a roll of paper 7 is mounted. The transverse arms revolvably support two rollers 8, 9 extending parallel to the roll of paper and at a distance therefrom to guide the paper web, as will be hereinafter more fully described. The roller 8 is provided at one end with a sprocket wheel 10 which is in alinement with a subjacent arranged sprocket wheel 11 of a stub shaft 12 which by means of the gearing 13 is driven from the main drive shaft 14. As is obvious from Figs. 1 and 3 a sprocket chain 15 is trained around the wheels 10 and 11 whereby rotation is imparted to the roller 8. On the opposite end of said roller 8 a gear 16 is provided meshing with a similar gear 17 of roller 9. Thus it is seen that upon rotation of the main drive shaft 14 rollers 8 and 9 are driven in opposite direction.

The paper is unwound from the roll 7 and is fed to the rollers 8, 9, such that it contacts with the lower side of the roller 8 and passes over the upper side of the roller 9 to the folder 18 and thence to the feed rollers 19, 20 fast to the shafts 21, 22 respectively, which are journaled in the side frames 1 and driven by gears 19' from the main drive shaft 14. The folded paper passes between said feed rollers and is engaged by the subjacent arranged cutting rollers 23 and 24, the former being mounted on the main drive shaft 14 while the latter is fast to a shaft 25 journaled in the side frames and driven from the main drive shaft. The roller 23 is provided with a knife blade 26 extending the entire length thereof, while the roller 24 is provided with a strip of rubber 27 or the like coöperating with said blade to cut a length of paper corresponding to the circumference of said cutting rollers. In its further travel the paper passes between another pair of rollers 28, 29 and is deflected by a slantingly disposed guide plate 30 to contact with the downwardly traveling side of a belt 31 trained around pulleys 32 and 33.

The lower pulley 32 is mounted upon a shaft 34 journaled in the frame members 1 and driven from the main drive shaft 14 by

suitable connection such as belting. After the paper has reached a position where its center registers with the contact point of the pair of rollers 35, 36 arranged in vertical alignment, a tucker blade 37 is caused to oscillate so as to force the paper between said roller 35 and 36, where it receives the second fold and thus is ready for delivery. The rollers 35, 36 are driven from the main drive shaft 14 by means of the sprocket wheels 70 and the chain 72 trained around said wheels. A gear 73 of the roller 36 meshes with a similar gear 73 of the roller 35 whereby the two rollers are driven in unison. The main drive shaft 14 is provided with a fast and loose wheel 74 and 75 respectively to provide for driving the various mechanisms.

The tucker blade 37 is secured to a lever 38 fast to a rock shaft 39 whose arm 40 is articulated to a link 41 pivotally connected to an arm 42 of another rock shaft 43. A lever 44 of the rock shaft 43 carries a roller 45 in engagement with the disk 46 of a shaft 47, a raised portion 48 of said disk causing the tucker blade 37 to oscillate and to fold the paper in the aforementioned manner.

A pair of sheaves 49, 50 are arranged sub-jacently to the rollers 35 and 36 and staggered belts 51, 52 connect respectively said rollers and said sheaves. The belt 52 is guided over an idler 50' to provide for the necessary tension of said belt.

From the foregoing it is obvious that the belts 51, 52 carry the paper from the rollers 35, 36 downwardly until it reaches the point opposite the container 53, as indicated diagrammatically in Fig. 6. A plunger 54 is then caused to move toward the sheet of paper between the belts 51, 52 whereby the paper is forced into the container 53, as is clearly indicated in Figs. 3 and 6. The plunger 54 has a stroke sufficient to pass the end pieces 55 of the container upon entering the same. The fore-and-aft movement of the plunger is effected by means of the link 56 pivotally secured to said plunger and articulated to a lever 58 of a rock shaft 60 journaled in the side frames 1. An arm 57 of said rock shaft is pivotally connected to a lever 59 fast to a rock shaft 61 whose arm 62 carries a roller 63 in engagement with a rotary disk 64 fast to a shaft 66 driven from the main drive shaft 14 by a train of gears. A projecting portion 65 of the disk oscillates the arm 62 whereby the plunger executes a reciprocating movement to force the paper into the container 53. In order to insure smooth operation of the plunger the same is provided with a tongue 67 slidably fitting in a groove 68 arranged in the bottom of the container 53, as indicated in Fig. 7. The end pieces 55 prevent the stack of folded papers from falling and simultaneously provide a guard for the return side of the belt 52. An angle plate 69 arranged

at the rear side of the stack supports the same and is gradually pushed to the outer end of the container as the same is being filled up. To insure engagement of the roller 63 and cam disk 64, a spring 76 is connected at one end to the lever 58 and on its other end to the frame so that the plunger 54 is quickly restored to normal position after operation. Similarly a spring 77 is attached to the lever 38 and is connected at its opposite end with the frame. If desired the machine can be built having double capacity to which end the transverse beams are provided with another extension 4 at the opposite end to provide for the support of another paper roll 7. It is then necessary to make the feed rollers and cutting rollers of double length and to install an additional plunger which may be driven from the same shaft.

Referring to Fig. 4 the paper web is shown in a position where it is ready to be folded the second time. Fig. 5 shows the tucker blade in a position where it has forced the paper napkin in engagement with the rollers 35 and 36, while Fig. 6 indicates the folded paper in a position opposite the container 53 whereto it has been conveyed by the staggered belts 51, 52. The following operation comprises the forward movement of the plunger 54 whereby the paper is disengaged from the staggered belts and is forced into the container past the side pieces 55 to contact with the previously delivered folded sections of paper, as indicated in dotted lines in Fig. 7.

From the foregoing description of the parts of the machine it is thought that the operation of the same is rendered sufficiently clear to make further description thereof unnecessary. While the preferred embodiment of the invention is shown in the drawings by way of example, it is distinctly to be understood that the inventor does not intend to confine himself to the modification shown, but avails himself of such alterations and modifications as come within the scope of the invention as defined by the appended claims.

I claim:

1. In a machine for cutting and folding sheets of paper, the combination with conveying means of a receptacle, a plunger adapted to release the detached sheet of paper from said conveying means and to force it into said receptacle, said receptacle being provided with a groove, said plunger being formed with a tongue slidably fitting in said groove, and means for reciprocating said plunger.

2. In a machine for cutting and folding sheets of paper, staggered belts for conveying the detached sheet of paper in vertical direction, a receptacle arranged in proper position relative to said belts and be-

ing open at the inner end, means at the said inner open end of said receptacle to prevent a stack of folded paper from falling and simultaneously provide a guard for the return side of said staggered belts, a plunger reciprocating in horizontal direction and adapted to project into said receptacle,

means for guiding said plunger in its reciprocating movement, and means for actuating said plunger, substantially as described. 10

In testimony whereof I hereunto affix my signature.

DAVID WILLIAM HUDSON.